



[7590-01-P]

NUCLEAR REGULATORY COMMISSION

[NRC-2018-0028]

Draft Flood Penetration Seal Performance at Nuclear Power Plants

Literature Review (Task 1.1) and Test Methodology (Task 1.2)

AGENCY: Nuclear Regulatory Commission.

ACTION: Draft literature review and test methodology; request for comment.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) is requesting public comment on Task 1.1 and Task 1.2 of the project entitled, "Flood Penetration Seal Performance at Nuclear Power Plants," in order to receive feedback from the widest range of interested parties and to ensure that all information relevant to developing this document is available to the NRC staff.

DATES: Submit comments by **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN *FEDERAL REGISTER*]**. Comments received after this date will be considered if it is practical to do so, but the Commission is able to ensure consideration only for comments received on or before this date.

ADDRESSES: You may submit comments by any of the following methods:

- **Federal Rulemaking Web Site:** Go to <http://www.regulations.gov> and search for Docket ID **NRC-2018-0028**. Address questions about NRC dockets to

Jennifer Borges; telephone: 301-287-9127; e-mail: Jennifer.Borges@nrc.gov. For technical questions, contact the individual listed in the FOR FURTHER INFORMATION CONTACT section of this document.

- **Mail comments to:** May Ma, Office of Administration, Mail Stop:

TWFN-7-A60M, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

For additional direction on obtaining information and submitting comments, see “Obtaining Information and Submitting Comments” in the SUPPLEMENTARY INFORMATION section of this document.

FOR FURTHER INFORMATION CONTACT: Thomas Aird, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; telephone: 301-415-2442; e-mail: thomas.aird@nrc.gov.

SUPPLEMENTARY INFORMATION:

I. Obtaining Information and Submitting Comments

A. Obtaining Information

Please refer to Docket ID **NRC-2018-0028** when contacting the NRC about the availability of information for this action. You may obtain publicly-available information related to this action by any of the following methods:

- **Federal Rulemaking Web Site:** Go to <http://www.regulations.gov> and search for Docket ID **NRC-2018-0028**.

- **NRC's Agencywide Documents Access and Management System**

(ADAMS): You may obtain publicly-available documents online in the ADAMS Public Documents collection at <http://www.nrc.gov/reading-rm/adams.html>. To begin the search, select "[ADAMS Public Documents](#)" and then select "[Begin Web-based ADAMS Search](#)." For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by e-mail to pdresource@nrc.gov. The draft Task 1.1, "Flood Penetration Seal Assemblies at Operating Nuclear Power Plants," is available in ADAMS under Accession No. ML18043B094. The draft Task 1.2, "Draft Methodology for Testing Flood Penetration Seals," is available in ADAMS under Accession No. ML18043B093.

- **NRC's PDR:** You may examine and purchase copies of public documents at the NRC's PDR, Room O1-F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.

B. Submitting Comments

Please include Docket ID **NRC-2018-0028** in the subject line of your comment submission.

The NRC cautions you not to include identifying or contact information that you do not want to be publicly disclosed in your comment submission. The NRC posts all comment submissions at <http://www.regulations.gov> as well as entering the comment submissions into ADAMS. The NRC does not routinely edit comment submissions to remove identifying or contact information.

If you are requesting or aggregating comments from other persons for submission to the NRC, then you should inform those persons not to include identifying

or contact information that they do not want to be publicly disclosed in their comment submission. Your request should state that the NRC does not routinely edit comment submissions to remove such information before making the comment submissions available to the public or entering the comment submissions into ADAMS.

II. Discussion

The objective of this research project is to characterize flood penetration seals currently installed at nuclear power plants (NPPs) and to develop a draft test methodology that evaluates the effectiveness and performance of flood penetration seals in their installed configurations. This work will support NRC staff's development and implementation of interim staff guidance on estimating the flooding potential of installed penetration seals and the amount of water flow through them. It will provide additional support to site-specific reviews of licensee flood hazard and mitigation strategy submittals.

There is currently no nationally recognized testing standard to evaluate the performance of penetration seals to prevent or limit flooding. This penetration seal flood test methodology is intended to support the evaluation of the flood mitigation performance of penetration seals that are installed to protect openings in barriers (walls/floors) that have been otherwise credited as having a flood resistance rating in support of a flood mitigation program at NPPs. In addition, a limited series of flood tests are to be conducted to assess the effectiveness and viability of the developed testing methodology.

Task 1 of this research project consists of two sub-tasks: Task 1.1 (ADAMS Accession No. ML18043B094) and Task 1.2 (ADAMS Accession No. ML18043B093). The first sub-task, Task 1.1, is a literature review of the various seal materials used for

flood seal penetrations at NPPs. This summary includes information regarding the size and shape of typical penetrations, the types of substrate medium, and the configurations of the penetrations to permit various piping through the penetrations. The primary source for much this literature review was that which is publically available through ADAMS. Additional sources included plant engineering documents provided to the NRC, Licensee Event Reports (LERs), fire tests, information available from vendors, and other NRC generated documents such as NUREGs, Information Notices (INs), and Inspection Reports.

The second sub-task, Task 1.2, is a draft test methodology proposed for testing the effectiveness and performance of flood seal penetrations. Included within this draft test methodology is the proposed documentation of the testing procedures which itself includes the scope of the test, referenced documents, definition of terminologies, the significance and use of the test procedures, the specimens and test equipment, and the conduct of the test. The overall intent of this draft methodology and subsequent testing (Task 2) is to provide background research and knowledge for the NRC staff or industry that could be used to support the evaluation of the flood mitigation performance of penetration seals. This test methodology may also be used as a starting point or framework for the future development of an industry consensus standard.

The objective of Task 2 of this project will be to test the effectiveness and adaptability of the draft test methodology with a limited series of flood tests. These flood tests will be conducted on a variety of candidate seal assemblies identified in Task 1.1. A technical letter report describing the testing and the test results will be the deliverable for Task 2. Upon the completion of the work in Tasks 1 and 2, a draft final report detailing the research conducted in Task 1 and 2 will be prepared. This final report is expected to be published as a NUREG document.

This document is not intended for interim use. The NRC will review public comments received on the document, and incorporate suggested changes as appropriate. Consistent with past experimental programs, the final test methodology will be considered a living document.

Changes to the final test methodology can, and likely will be made during the testing phase as insights and observations from the testing develop that would suggest changes are necessary to ensure quality data from experiments is being obtained.

Dated at Rockville, Maryland, this 13th day of February, 2018.

For the Nuclear Regulatory Commission.

Mark Henry Salley, Chief,
Fire and External Hazard Analysis Branch,
Division of Risk Analysis,
Office of Nuclear Regulatory Research.

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